

Attorney Docket No. 7175-202197

Application No. 10/657,696 (Filed September 8, 2003)

Reply to Office Action dated May 2, 2007

LISTING OF CLAIMS

This listing of claims below will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently amended) A patient support comprising,

a frame positioned to support a mattress, the frame including a base frame supported by a floor, an intermediate frame positioned over the base frame, a first pair of lift arms coupled together at a first end by a first cross member, and, a second pair of lift arms coupled together at a first end by a second cross member, the first ends of the first pair of lift arms being configured to slide along at least one of the base frame and the intermediate frame, the first ends of the second pair of lift arms being configured to slide along at least one of the base frame and the intermediate frame, and

at least one actuator ~~coupled to a controller area network~~ configured to move the intermediate frame relative to the base frame between first and second positions, during movement of the intermediate frame between the first and second positions, a distance between the first and second cross members increases to provide clearance for at least one of the intermediate frame and the base frame;

wherein the intermediate frame is positionable between the first and second cross members when the intermediate frame is in the second position.

2.(Original) The patient support of claim 1, wherein the lift arms slide along the base frame.

3.(Original) The patient support of claim 1, wherein the intermediate frame is positioned above the first and second cross members when the intermediate frame is positioned in the first position and the intermediate frame is positioned between the first and second cross members when the intermediate frame is in the second position.

4.(Original) The patient support of claim 1, wherein the first pair of lift arms further includes a pair of links extending between the base frame and intermediate frame and a pair of guide links coupled to midpoints of the links and at least one of the base frame and intermediate frame.

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5.(Original) The patient support of claim 1, wherein the base frame and intermediate frame nests together.

6.(Original) The patient support of claim 1, wherein the lift arms are positioned between the intermediate frame and the base frame when the intermediate frame is in the second position.

7.(Original) The patient support of claim 1, wherein the first and second cross members extend transversely relative to a longitudinal axis of the frame.

8.(Previously presented) The patient support of claim 1, further comprising means for providing pressurized air to a mattress supported by the frame, means for blocking egress of a patient from the mattress, foot control means for operating features of the patient support, power and control means for providing power and control to the actuator, rotational support means configured to permit movement of the frame on a floor, control means for controlling features of the patient support, the control means being removably coupled to the blocking means, mattress control means for controlling operation of the mattress, power supply means for providing power to components of the patient support, and network means for communicating between at least two of the power and control means, the control means, the block means, and mattress control means.

9.(Currently amended) A patient support comprising, a base frame, an intermediate frame, and a lift mechanism configured to move the intermediate frame between raised and lowered positions relative to the base frame, at least one of the base and intermediate frames defining an interior region in which the other of the at least one of the base and intermediate frames is positioned when the intermediate frame is in the lowered position, at least one of the base and intermediate frames including transverse step members extending from the interior region and configured to couple the intermediate frame to a weigh frame, ~~the lift mechanism being coupled to a controller area network.~~

10.(Previously presented) The patient support of claim 9, wherein the weigh frame is supported by the intermediate frame and a plurality of load cells are supported by the transverse step members.

11.(Original) The patient support of claim 9, wherein the intermediate frame includes the transverse step members.

12.(Original) The patient support of claim 11, wherein the transverse step members are positioned directly over the base frame.

13.(Original) The patient support of claim 12, wherein the base frame includes a pair of longitudinally extending members and the transverse step members are positioned directly over the longitudinally extending members of the base frame.

14.(Original) The patient support of claim 9, further comprising a pair of lift arms configured to move the intermediate frame relative to the base frame between raised and lowered positions, the lift arms being positioned in a space defined between longitudinally extending members of the base and intermediate frames when the intermediate frame is in the lowered position.

15.(Original) The patient support of claim 9, wherein at least two of the transverse step members extend in opposite directions and at least two of the transverse step members extend in the same direction.

16.(Currently amended) A patient support comprising,
a base frame,
an intermediate frame, and
a lift mechanism configured to move the intermediate frame between raised and lowered positions relative to the base frame, at least one of the base and intermediate frames defining an interior region in which the other of the at least one of the base and intermediate frames is positioned when the intermediate frame is in the lowered position, the lift mechanism being positioned between the intermediate frame and the base frame when the intermediate frame is in the lowered position,~~the lift mechanism being coupled to a controller area network.~~

17.(Original) The patient support of, claim 16, wherein the base frame and intermediate frames include longitudinally extending members cooperating to define a space therebetween and the lift mechanism is positioned in the space.

18.(Previously Presented) The patient support of claim 17, wherein the longitudinally extending members of the intermediate frame is spaced apart from a center axis by a first horizontal distance, the longitudinally extending members of the base frame is spaced apart from the center axis by a second horizontal distance, and the lift mechanism is spaced apart from the center axis by a third horizontal distance, the third distance is greater than one of the first and second distances and less than the other of the first and second distances.

19.(Original) The patient support of claim 16, wherein the lift mechanism is configured to slide along at least one of the base and intermediate frames during movement of the intermediate frame between the raised and lowered positions.

20.(Original) The patient support of claim 16, wherein the intermediate and base frames nest together when the intermediate frame is in the lowered position.

21.(Original) The patient support of claim 20, wherein a lower-most portion of the intermediate frame extends below an upper-most portion of the base frame when the intermediate frame is in the lowered position.

22.(Original) The patient support of claim 16, wherein portions of the lift mechanism are positioned above the intermediate frame when the intermediate frame is in the lowered position.

23-50.(Canceled)

51.(Withdrawn) The patient support of claim 1, wherein the controller area network includes a serial bus connecting a plurality of control modules, the plurality of control modules including a controller and transceiver.

52.(Withdrawn) The patient support of claim 51, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

53.(Withdrawn) The patient support of claim 9, wherein the controller area network includes a serial bus connecting a plurality of control modules, the plurality of control modules including a controller and transceiver.

54.(Withdrawn) The patient support of claim 53, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

55.(Withdrawn) The patient support of claim 16, wherein the controller area network includes a serial bus connecting a plurality of control modules, the plurality of control modules including a controller and transceiver.

56.(Withdrawn) The patient support of claim 55, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient

support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

57.(Withdrawn) A patient support, including:

a frame;

a deck coupled to the frame for supporting a patient;

a masterless communication network;

a plurality of modules connected to the network, each module being configured to perform a dedicated function during operation of the patient support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

58.(Withdrawn) The patient support of claim 57, wherein the network includes a serial bus.

59.(Withdrawn) The patient support of claim 57, wherein the network is a controller area network.

60.(Withdrawn) The patient support of claim 57, wherein each module includes a transceiver and a processor.

61.(Withdrawn) The patient support of claim 57, wherein each module periodically transmits a status message over the network to indicate the operational status of the module.

62.(Withdrawn) The patient support of claim 57, wherein at least two modules can simultaneously access the network.

63.(Withdrawn) The patient support of claim 57, wherein the message is broadcast to all of the plurality of modules except the module transmitting the message.

64.(Withdrawn) The patient support of claim 57, wherein the network is configured such that the plurality of modules automatically detect an addition of a new module to the network.

65.(Withdrawn) The patient support of claim 57, wherein one of the modules is a communications module coupled to an interface to transmit signals received from other modules to a remote location.

66.(Withdrawn) The patient support of claim 57, wherein one of the modules is electrically coupled to a motor configured to position a section of the deck and a sensor configured to provide a signal indicative of a position of the deck, the one module monitoring the position of the

deck section based on the position signal, and controlling the position of the deck section by operating the motor.

67.(Withdrawn) The patient support of claim 57, further including a test module that functions as a master module when connected to the network, the test module being configured to transmit a message over the network to a selected other module to test a function of the selected other module.

68.(Withdrawn) The patient support of claim 57, wherein the patient support includes an inflatable mattress and an air pump coupled to the mattress, one of the modules being configured to provide a control signal to the air pump in response to message transmitted over the network to selectively inflate and deflate the mattress.

69.(Withdrawn) The patient support of claim 57, wherein the patient support includes a weigh frame for measuring the weight of a patient on the patient support and outputting a signal indicative of the weight of the patient, one of the modules being a scale module configured to receive the signal and provide a message over the network indicating the weight of the patient.

70.(Withdrawn) The patient support of claim 57, wherein the patient support includes an interference detection device configured to output a signal indicating the presence of an obstruction to positioning the patient support, one of the modules being configured to receive the signal and provide a message over the network to another one of the modules, the message including information indicating the presence of the obstacle.

71.(Withdrawn) The patient support of claim 57, wherein the other module prevents the positioning of the patient support.

72.(Withdrawn) The patient support of claim 57, wherein the network includes an application layer that complies with the CANopen communication protocol.

73.(Withdrawn) A patient support comprising:
a base frame,
an intermediate frame,
a mattress defining a patient rest surface, and
at least one actuator coupled to a controller area network to move the intermediate frame relative to the base frame between first and second positions, wherein the controller area network includes a serial bus connecting a plurality of control modules, the plurality of control modules each having a controller and transceiver.

74.(Withdrawn) The patient support of claim 73, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient

support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

75.(Withdrawn) A patient support comprising:

a frame;

a deck coupled to the frame for supporting a patient;

a mattress defining a patient rest surface; and

a plurality of control modules linked to a controller area network, wherein one of the plurality of control modules is electrically coupled to a motor configured to position a section of the deck and a sensor configured to provide a signal indicative of a position of the deck, the one module monitoring the position of the deck section based on the position signal, and controlling the position of the deck section by operating the motor.

76.(Withdrawn) The patient support of claim 75, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient support, and to transmit a message over the controller area network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

77.(Withdrawn) The patient support of claim 75, wherein the controller area network includes a serial bus connecting the plurality of control modules.

78.(Withdrawn) The patient support of claim 75, wherein each of the plurality of control modules includes a transceiver and a processor.

79.(Withdrawn) A patient support, comprising a base frame,
an intermediate frame,
a mattress defining a patient rest surface, and
a plurality of control modules each having a controller and transceiver and being linked to a masterless communication network, wherein one of the plurality of control modules is configured to cause at least one actuator to move the intermediate frame relative to the base frame between first and second positions.

80.(Withdrawn) The patient support of claim 79, wherein the network is a controller area network.

81.(Withdrawn) The patient support of claim 79, wherein the network includes a serial bus.

82.(Withdrawn) The patient support of claim 79, wherein each of the plurality of control modules is configured to perform a dedicated function during operation of the patient support, and to transmit a message over the network for receipt by any of the other modules, the message including an identifier for use by the other modules in determining whether to process the message.

83.(Withdrawn) A patient support comprising,
a frame positioned to support a mattress, the frame including a base frame supported by a floor, an intermediate frame positioned over the base frame, a first pair of lift arms coupled together at a first end by a first cross member, and, a second pair of lift arms coupled together at a first end by a second cross member, the first ends of the first pair of lift arms being configured to slide along at least one of the base frame and the intermediate frame, the first ends of the second pair of lift arms being configured to slide along at least one of the base frame and the intermediate frame, and

a plurality of control modules linked to a masterless communication network, wherein one of the plurality of control modules is configured to move the intermediate frame relative to the base frame between first and second positions, the movement of the intermediate frame between the first and second positions increasing a distance between the first and second cross members to provide clearance for at least one of the intermediate frame and the base frame;

wherein the intermediate frame is positioned between the first and second cross members when the intermediate frame is in the second position.

84.(Withdrawn) The patient support of claim 83, wherein the network is a controller area network including a serial bus.

85.(Withdrawn) The patient support of claim 83, wherein the lift arms slide along the base frame.

86.(Withdrawn) The patient support of claim 83, wherein the intermediate frame is positioned above the first and second cross members when the intermediate frame is positioned in the first position and the intermediate frame is positioned between the first and second cross members when the intermediate frame is in the second position.

87.(Withdrawn) The patient support of claim 83, wherein the first pair of lift arms further includes a pair of links extending between the base frame and intermediate frame and a pair of guide links coupled to midpoints of the links and at least one of the base frame and intermediate frame.

88.(Withdrawn) The patient support of claim 83, wherein the base frame and intermediate frame nests together

89.(Withdrawn) The patient support of claim 83, wherein the lift arms are positioned between the intermediate frame and the base frame when the intermediate frame is in the second position.

90.(Withdrawn) The patient support of claim 83, wherein the first and second cross members extend transversely relative to a longitudinal axis of the frame.

91.(Withdrawn) The patient support of claim 83, further comprising means for providing pressurized air to a mattress supported by the frame, means for blocking egress of a patient from the mattress, foot control means for operating features of the patient support, power and control means for providing power and control to the actuator, rotational support means configured to permit movement of the frame on a floor, control means for controlling features of the patient support, the control means being removably coupled to the blocking means, mattress control means for controlling operation of the mattress, power supply means for providing power to components of the patient support, and network means for communicating between at least two of the power and control means, the control means, the block means, and mattress control means.

92.(Withdrawn) A patient support comprising, a base frame, an intermediate frame, and a plurality of control modules linked to a masterless communication network, wherein one of the plurality of control modules is configured to cause a lift mechanism to move the intermediate frame between raised and lowered positions relative to the base frame, at least one of the base and intermediate frames defining an interior region in which the other of the at least one of the base and intermediate frames is positioned when the intermediate frame is in the lowered position, at least one of the base and intermediate frames including transverse step members extending from the interior region and configured to couple the intermediate frame to a weigh frame.

93.(Withdrawn) The patient support of claim 92, wherein the network is a controller area network including a serial bus.

94.(Withdrawn) The patient support of claim 92, wherein the weigh frame is supported by the intermediate frame and a plurality of load cells are supported by the transverse step members.

95.(Withdrawn) The patient support of claim 92, wherein the intermediate frame includes the transverse step members.

96.(Withdrawn) The patient support of claim 95, wherein the transverse step members are positioned directly over the base frame.

97.(Withdrawn) The patient support of claim 96, wherein the base frame includes a pair of longitudinally extending members and the transverse step members are positioned directly over the longitudinally extending members of the base frame.

98.(Withdrawn) The patient support of claim 92, further comprising a pair of lift arms configured to move the intermediate frame relative to the base frame between raised and lowered positions, the lift arms being positioned in a space defined between longitudinally extending members of the base and intermediate frames when the intermediate frame is in the lowered position.

99.(Withdrawn) The patient support of claim 92, wherein at least two of the transverse step members extend in opposite directions and at least two of the transverse step members extend in the same direction.

100.(Withdrawn) A patient support comprising,
a base frame,
an intermediate frame, and
a plurality of control modules linked to a masterless communication network, wherein one of the plurality of control modules is configured to cause a lift mechanism to move the intermediate frame between raised and lowered positions relative to the base frame, at least one of the base and intermediate frames defining an interior region in which the other of the at least one of the base and intermediate frames is positioned when the intermediate frame is in the lowered position, the lift mechanism being positioned between the intermediate frame and the base frame when the intermediate frame is in the lowered position.

101.(Withdrawn) The patient support of claim 100, wherein the network is a controller area network including a serial bus.

102.(Withdrawn) The patient support of claim 100, wherein the base frame and intermediate frames include longitudinally extending members cooperating to define a space therebetween and the lift mechanism is positioned in the space.

103.(Withdrawn) The patient support of claim 102, wherein the longitudinally extending members of the intermediate frame is spaced apart from a center axis by a first horizontal distance, the longitudinally extending members of the base frame is spaced apart from the center axis by a second horizontal distance, and the lift mechanism is spaced apart from the center axis by a third horizontal distance, the third distance is greater than one of the first and second distances and less than the other of the first and second distances.

104.(Withdrawn) The patient support of claim 100, wherein the lift mechanism is configured to slide along at least one of the base and intermediate frames during movement of the intermediate frame between the raised and lowered positions.

105.(Withdrawn) The patient support of claim 100, wherein the intermediate and base frames nest together when the intermediate frame is in the lowered position.

106.(Withdrawn) The patient support of claim 105, wherein a lower-most portion of the intermediate frame extends below an upper-most portion of the base frame when the intermediate frame is in the lowered position.

107.(Withdrawn) The patient support of claim 100, wherein portions of the lift mechanism are positioned above the intermediate frame when the intermediate frame is in the lowered position.